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Report of the United States of America on the 2010 World Programme on Population and Housing Censuses

Note by the Secretary-General

In accordance with a request of the Statistical Commission at its forty-second session (see E/2011/24, chap. I, sect. A), the Secretary-General has the honour to transmit the report of the United States Census Bureau, containing a programme review of the 2010 World Population and Housing Census Programme, which encompasses the years 2005 to 2014. The report presents a mid-decade review of the 2010 census programme based on the information provided by member countries in response to a survey. It summarizes the lessons learned to date and provides insight into the potential direction of the 2020 World Census Programme, as a critical point has now been reached in assessing the future direction of census-taking around the world. With rapidly changing technologies and advances in census methodology, the report contains recommendations for discussion and consideration for future work by the Commission in this area.

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Report of the United States of America on the 2010 World Programme on Population and Housing Censuses

I. Introduction and background

1. For over six decades, the United Nations has supported national census-taking worldwide through the decennial World Programme on Population and Housing Censuses. In March 2005, the Statistical Commission at its thirty-sixth session initiated the 2010 World Programme on Population and Housing Censuses. The Economic and Social Council approved the programme through the adoption of its resolution 2005/13. The resolution, in part, stresses the need for conducting censuses and, together with the report of the Statistical Commission on its thirty-sixth session (E/2005/24), contains three essential programme goals:

- Agreeing on international principles and recommendations to conduct a census;
- Conducting a population and housing census at least once during the period 2005 to 2014;
- Disseminating census results for effective socio-economic planning and monitoring of population issues, policies and trends.

2. Critical to the success of the World Census Programme is member countries work with each other, in cooperation with the United Nations and its regional commissions, and other intergovernmental organizations. The exchange of scientific and technical expertise and information is necessary to strengthen census-taking and results.

3. At its forty-second session, the Statistical Commission requested that a review of the 2010 World Programme on Population and Housing Censuses be carried out with the results to be presented at its next session. Pursuant to that request, the United States Census Bureau agreed to conduct the programme review. This is the first time a country has prepared a programme review on the World Census Programme. In the past, reports on updates to the Programme were presented by the Statistics Division.[1]

4. The review is structured as follows: section II states the objective; section III reviews the methodology used for the review; section IV provides early lessons learned from the 2010 World Census Programme; section V discusses evolving census methods and the resulting issues of differing census concepts and definitions; section VI describes possible trends for the 2020 round; section VII outlines conclusions; and section VIII presents recommendations and discussion points.

II. Objective of the review

5. The primary objectives of the present review are to: (a) document the early lessons learned from the 2010 round of worldwide population and housing censuses,

[1] For example: working paper by the Statistics Division (UNSD/DSSB/1) entitled "Report on the results of a survey on census methods used by countries in the 2010 census round", February 2011; and E/CN.3/2005/11.

covering the years 2005 to 2014; and (b) identify preliminary recommendations for the Statistical Commission to consider as planning begins on the 2020 World Programme on Population and Housing Censuses.

6. The United States Census Bureau based its approach and findings on a questionnaire sent to Member States, literature reviews and consultations with members of the international statistical community. Census-taking is at a crossroads. With rapidly changing technology, evolving census methodologies, privacy concerns and increasing needs for more timely data, in many countries of the world the approach to census-taking will likely be fundamentally different in the 2020 round of population and housing censuses from the current 2010 World Census Programme.

III. Methodology

7. To gather the data needed for this review, the United States Census Bureau developed a questionnaire for gaining insight into the lessons learned by countries at this mid-point in the 2010 World Census Programme and their perspectives on potential directions for the 2020 round of censuses. The questionnaire consisted of 38 questions: 7 closed-ended, 4 open-ended, and 27 with closed-ended and open-ended categories. For 17 of the questions, respondents could mark multiple categories. Countries were instructed to refer to their census planned during the period 2005 to 2014. If they conducted only one population and housing census, their survey responses would reference that census. If a country planned to conduct or conducted more than one census during that period, they were asked to reference their responses to their census taken in the year closest to 2010.

8. Between 13 June and 30 June 2011, the Statistics Division sent, primarily by e-mail, questionnaires (with instructions and an introduction) to the 192 States Members of the United Nations.[2] Questionnaires were initially sent to countries in English, and then in French, Russian or Spanish upon request by countries.

9. In total, by the final deadline (1 September 2011), 109 countries, or 57 per cent (see annex) had returned completed questionnaires; one additional country did not return a questionnaire, but indicated it was not conducting a census during the period under review. There was regional variation in response rates as follows: Africa (49 per cent), Asia (56 per cent), Europe (80 per cent), North America (61 per cent), Oceania (46 per cent) and South America (58 per cent).

10. The United States Census Bureau arranged for the translation into English of responses to open-ended questions that were submitted in other languages. Closed-ended questions were keyed and edited using the Census Bureau's Census and Survey Processing System (CSPro) software. During September 2011, Census Bureau staff conducted quantitative analysis (closed-ended questions) and qualitative analysis (open-ended questions) of the survey results, with the preparation of the programme review and an internal Census Bureau review completed in early November 2011.

11. The analysis of the responses focused on: (a) establishing an overview of the census methodologies and enumeration methods used during the 2010 round;

[2] Excluding South Sudan, which became a State Member of the United Nations in July 2011.

(b) assessing the use of new census methods or technologies, including early challenges and successes for the 2010 World Census Programme; (c) disseminating data; and (d) looking towards the 2020 round, including future trends, international collaboration and United Nations assistance.

12. It should be noted that the review reflects the collective experience of the countries responding to the questionnaire. Responses from the survey results were combined to present results and overall impressions. Responses are not associated with a specific country or respondent.

13. For the 2010 World Census Programme, peak census-taking was between 2010 and 2011. This limited the collection of lessons learned, since many countries were either in the midst of completing their census or in the process of conducting their census when the programme review questionnaires were sent out. Many countries responded that it was too early to provide lessons learned. Any lessons learned are thus preliminary in nature.

14. Future programme reviews should be conducted at established periods throughout the decade, perhaps both mid-programme and at the end, to get the full scope of lessons learned and developing trends. A mid-programme review provides an initial evaluation of the censuses conducted to date and early lessons learned. A programme review at the end will allow all countries to provide their insights and early thoughts on the next census round.

> **Recommendation 1**: The present programme review provides an initial evaluation of the censuses conducted and lessons learned but it is early in the decade to get a good assessment of the programme from most countries, as the bulk of census- taking occurs in the years ending in 10 and 11. The Statistical Commission should consider conducting another lessons learned evaluation as the 2010 census round closes out in 2014.

15. There are limitations to the questionnaire that affected the data collected. The survey development was done in a compressed time frame, not allowing for pre-testing.[3] The Census Bureau analysts noted issues with skip patterns, inconsistencies in responses, and confusion over the purpose of some questions.

> **Recommendation 2**: Establish an international working group to develop and test an instrument to look at census challenges, lessons learned and directions for the future. This survey would be used in the beginning of a census cycle, at the mid-point and at the end to assess the trends of the decade. Repeated use of the same instrument will enable comparison of data throughout the decade. Create a companion document explaining the purpose of each survey question.

[3] The United States Census Bureau thanks Jerry Banda, formerly of the Statistics Division, Andre Cyr and Don Royce, both of Statistics Canada, for reviewing the initial draft questionnaire. The Statistics Division provided additional comments and editing.

IV. 2010 experience and lessons learned

16. The present survey was taken halfway through the 2010 census round. Lessons learned that are discussed are preliminary, but instructive. Many countries indicated that was too early to provide any lessons learned, as they were still finishing their census.

A. Sources of data and enumeration methods

17. For sources of data (where the data come from), at first glance, a traditional census with full field enumeration is the main source of census data for 90 of the 109 countries (83 per cent).[4] However, when all the data collection source questions are reviewed, a more complex picture is seen. While some countries use only direct enumeration methods for data collection, other countries are combining field enumeration with other sources of data to produce their census results. In many countries, registers, administrative records and sample surveys are either replacing field enumeration or are being used to supplement data collected directly by enumerators. A total of 26 countries (24 per cent) reported using administrative registers or administrative records.

18. For the question on enumeration methods (how the data are collected), countries could select multiple responses. Face-to-face interviewing using a paper questionnaire was the main enumeration method (72 per cent), followed by self-enumeration using a paper questionnaire (32 per cent), partial data collection using the Internet (29 per cent) and using telephone interviews (12 per cent).

19. While 42 countries (39 per cent) use face-to-face enumeration with a paper questionnaire as their only data collection method, in general, the trend is for countries to use a variety of methods for their count and to move away from the concept of a single method of data collection. A multi-mode census is increasingly being used, that is, census data being collected using a mixture of data sources and/or collection methods.

20. For example, it is becoming more common for a country to collect data using the telephone, Internet and paper questionnaires, and perhaps use administrative records and/or an ad hoc survey to supplement the data collected. Countries are using the multi-mode option with a multitude of variations to address their own data needs and circumstances; the programme review survey, fielded in 2011, could not accurately reflect all the variations of multi-mode censuses reported for two reasons, namely, the questionnaire design did not allow for all the multi-mode variations, and there were definitional issues with responses. This first lesson learned from the 2010 World Census Programme will be more fully explored in section V.

[4] See United Nations *Principles and Recommendations for Population and Housing Censuses, Revision 2* (United Nations publication, Sales No. E.07.XVII.8, paras. 1.60 and 1.61) for a definition of a traditional census. There are many variations on the traditional census approach and countries using this design may use very different data-collection methodologies. This will be discussed further in sect. V of the present review.

B. Challenges and successes

21. The programme review survey asked about the challenges and successes faced by each country in the 2010 World Census Programme of census-taking, a question for which countries could mark multiple responses. The most frequently reported challenge (67 per cent) was cost.. Some of the other challenges, in order of frequency, included timeliness (42 per cent), data quality (39 per cent), decreased response rates (39 per cent), public perceptions (37 per cent) and privacy (32 per cent).

22. Since cost is the greatest challenge, there is a need to develop an accurate method to compare the costs of taking censuses across countries. One possibility would be to look at the components of a census to derive total cost, using well-defined components to ensure consistency of costs provided. The selected cost method should be based on the purpose of the comparison and not just the total cost.

23. For example, one might use gross domestic product (GDP) or per capita income as a measure of economic and educational status of a country. The higher these measures, the greater the probability that there are more expectations from the population regarding a census and census- taking, such as pressure to provide response options, qualifications of the enumerators and the availability of data-dissemination tools.

24. Another factor with enormous impact on the cost of a census is whether the country already has (and has therefore paid for) a national population register that can serve as a source of information.

25. When comparing costs, the expected quality of census coverage must also be considered, that is, what the expectations are in terms of how accurate the population count is required to be.[5] In countries where the numbers are used for Government representation and distribution of funds, the count may have to be extremely accurate, which increases the cost.

26. In addition, the physical size of the country, its terrain and the number of languages spoken by its populace add to the cost. The process to obtain accurate costs is very difficult, but it is critical for countries, including those requiring financial assistance, in order to keep costs down. Classifying costs by region and/or by census method may also be considered.

> **Recommendation 3**: Work should be done to develop an accurate, viable method for estimating the costs of conducting a census that can be used to compare census cost across regions and/or countries.

27. The successes varied greatly. The implementation of new technologies, staying within budget, meeting deadlines and maintaining data quality, were most frequently cited census successes in the 2010 round. For some countries, just being able to do a census was a major achievement. Other countries are seeking alternative methods of

[5] For some countries, the expectation for a census may be 100 per cent population coverage, even though this is widely believed to be unrealistic.

census-taking, noting privacy, falling response rates or costs as a motivator for using a new method or new methods.

28. The programme review also sought to find out the level of participation among countries in the 2010 census round versus the 2000 round. For the 2010 World Census Programme, the Statistics Division[6] reported that only 3 of the 192 States Members of the United Nations either would not conduct a census, or no information was available with regard to their census plans. This is compared with 25 countries out of 192 in the 2000 census round that either did not conduct a census or for which no information was available. This is a significant increase and should be noted.

C. Other methodologies[7]

29. For methodologies other than the traditional census, the programme review survey considered the use of pre-existing administrative records, administrative registers, rolling census and hybrid methodologies. The survey results indicated that:

- 9 countries are using pre-existing administrative records to supplement other sources of data[8]
- 1 country is conducting a rolling census
- 37 countries are using administrative registers as their primary source or other source of data
- 18 countries use annual or other regularly conducted sample surveys to supplement their data
- 16 countries conducted ad hoc sample surveys as part of their census data collection activities
- 14 countries indicated "other" on the questionnaire

When countries were asked to be specific, responses included the use of registers combined with field enumeration (both field enumeration or on a sample basis); statistical registers; administrative sources combined with the Internet, telephone and field enumeration; the use of administrative registers for item non-response; administrative data used to enumerate prison and detention centre populations; and address lists created by matching administrative and commercial sources.

30. Of the countries that responded, 17 had tried a new methodology for the first time. The majority of those 17 countries is planning to repeat the new methodology for the 2020 census round.

[6] Information retrieved on 1 November 2011 from the Statistics Division website (http://unstats.un.org) and confirmed with Statistics Division staff through an exchange of e-mails.

[7] Other methodologies refer to any census-taking method other than a "traditional method" using a full field enumeration, including conducting a census using administrative register(s) or a rolling census.

[8] See sect. V.B for an explanation of pre-existing administrative records and administrative registers.

31. The benefits of using the new methodologies were timeliness, decreased cost and improvements in data quality. The key risks were the reduction in the number of topics included in the census (that is, decreased content) and the use of data definitions provided by the data source, instead of census definitions. For example, if a country is using an administrative register, the data categories defined by the Government department responsible for the register may or may not be the same definitions used or preferred by the statistical agency taking the census.

32. The World Census Programme and statistical agencies could benefit from collecting additional information later in this census round, about the successes and challenges of different modes in the multi-mode countries (see recommendation 2 above).

D. New (information) technologies

33. As the complexities in census-taking increase, so does the demand for using technology. Most countries are using some form of technology or indicated they would in the near future. Countries were asked to indicate what types of technology they used during the 2010 census round and for this question, countries could mark multiple responses. Geographic information systems (GIS) is the most widely used technology (58 per cent) and computer-assisted coding (42 per cent), optical mark recognition (OMR) (30 per cent) and optical character recognition (OCR) (38 per cent), as well as other scanning methods (37 per cent), are being used extensively.

34. With regard to new technologies, the survey sought information on the use of the Internet (40 per cent), laptops (24 per cent), hand-held or tablet computers (10 per cent), geographic systems and scanning and recognition systems. These topics cover technologies used for data collection and data processing. Data-dissemination technologies are addressed in section E below.

35. Technology clearly has had a large impact on the way a census is conducted. Countries reported that the benefits of automated technologies include improving the data quality, timeliness and lowering costs of field operations, data capture and data dissemination. However, it is necessary to assess short-term and long-term costs versus benefits.

36. Countries mentioned increased start-up costs, lack of staff expertise and privacy and confidentiality concerns as risks. Even with the risks, census response rates in those countries either remained the same or increased. From reviewing responses to open-ended questions, consideration should be given to when it is appropriate to use technology and when existing manual processes are sufficient to support a country's census. When funding and technical expertise is limited, options must be carefully weighed before deciding on the suitable level of technology to pursue in census-taking.

37. Countries using hand-held digital devices and the Internet for data collection now are considering possible technologies that may be available by the 2020 round. Moreover, most countries using paper questionnaires expressed an interest in using hand-held digital devices, laptops or the Internet in the 2020 round.

E. Data dissemination

38. A census is not complete until the data are released to the users. The programme review sought information about the methods used by countries to provide their data to users and countries were asked to indicate their primary method of census data dissemination. This included the use of paper publications, CDs, DVDs, static web pages, interactive online databases and web-based mapping tools. Of the responding countries, 54 (51 per cent) use paper publications as their primary method of data dissemination, 30 (29 per cent) use static web pages (html, pdf, etc.), while only 17 countries (16 per cent) use interactive online databases.

39. Countries were then asked to indicate other methods of data dissemination they use — a question for which countries could mark multiple responses. For other methods countries indicated that they use CD-ROMs or DVDs, static web pages, paper publications, interactive online databases and mapping tools.

40. More than 90 per cent of the countries consulted with their data users and stakeholders about their data dissemination plans.

V. Defining how we do what we do

41. Countries are becoming more creative in their census designs and developing new census methods. Increasingly countries are moving away from a full field enumeration with enumerators going door-to-door to collect data. Indeed, a growing number of countries are considering less census data collection and moving to the use of registers and other techniques to obtain data for census counts.

42. Even within a particular methodology, there are vast differences in how the method is carried out. For example, the labour pool of enumerators may differ from country to country and may be special hires, Government employees, teachers or volunteers. The programme review shows a myriad of data sources, data-collection methods and new technologies for countries marking traditional census on the survey questionnaire. These may include the use of administrative records, the Internet, telephone and/or ad hoc surveys. Countries using administrative registers may use different types of registers, or use registers and supplement the data with another method.

A. Traditional census

43. What is a traditional census? The survey results showed wide variation in the definition of a traditional census and little consistency in how the term is used across countries. What is perceived as a traditional census in one country may be a new methodology in another. With the use of technology, the inclusion of a multitude of data sources, and data-collection methodologies, does the term accurately reflect the current state of census-taking? This is another key lesson learned from the 2010 round. The term is more confusing than ever and is used differently across countries.

44. The distinction needs to be made between census-taking using full field enumeration, full enumeration, the extent of technology used, and other methods to capture more precisely the current state of census-taking.

B. Administrative records and administrative registers

45. For the purposes of the programme review survey, pre-existing administrative records and administrative registers were separate categories. The programme review questionnaire lacked an explanation of the difference between the two terms; however, when analysing the survey data, there is a broad range of differences in how the terms are used.

46. The two terms should be better defined to clarify how they are being used. The distinction is based on how the administrative data are used. Are the data used to create the census count (register-based census) or to support the enumeration (for example, aid in developing an address frame, item non-response, etc.) through other methods? The distinction needs to be clarified. Then it is necessary to develop terminology that accurately reflects the use of the data.

47. For the purposes of the present paper, administrative records are defined as data used to administer a programme and contain information only on persons receiving a service or benefit from that programme. For example, they may be school registration files, driver licence files or financial assistance files. The United States defines administrative registers as a data source that requires all the members of a group — such as persons, businesses or landowners — to register and notify Governments when they move or to update information, and that contains unique identification numbers that have the potential to link data across sources. The number may be used for virtually all Government transactions.

48. Administrative registers and administrative records are distinct concepts that are blurred in their meaning and usage. In past Statistics Division studies, they have been put into the same category and used interchangeably. With the present programme review, they were intentionally separated. The survey results indicated that for some countries the terms are interchangeable, while for other countries, due to policies or privacy issues, there are differences between the two terms. It is important for accurate assessments of census methodologies to define the distinction between the two and gather information on their usage.

C. Multi-mode census

49. With the growing complexity of census-taking within countries, how can a multi-mode census be accurately defined? How does one accurately describe all of the different permutations of the multi-mode methodology as its use increases? In the future, a common terminology will be needed to assess the different types of multi-mode census-taking to learn whether countries still have a predominant method or if there is a multiplicity of methods being used.

50. Furthermore, what evaluation criteria are needed to get a more exact look at the variations of modes used? One method to consider might be to analyse the percentage of final responses attributable to each mode used within a census. This will better enable us to understand and contrast multi-mode use across countries and the cost, quality and complexity implications.

51. The survey results show that 96 per cent of the respondents will use United Nations concepts and definitions for their 2020 census round preparations. This reinforces the need for recommendation 4 below.

Recommendation 4: The United Nations should create a task force or committee to rethink, update and synchronize definitions of census terminology for data sources and enumeration methods based on current practices. Make sure terminology and acronyms are defined and consistently used.

VI. The 2020 census round: looking forward

52. Major changes have occurred in census-taking from the 2000 round to the 2010 round and will continue to evolve between the 2010 and 2020 rounds. The international statistical community exists within a rapidly changing and evolving environment. Technology is changing our daily lives and the way in which census data are collected, processed and disseminated. New census methods are developed to meet societal changes. The demand for data is increasing to help with policy formation and decision-making, administering programmes and for monitoring overall development progress. Census data may also be used for allocation of national funding and services, a source of demarcation of constituencies and allocation of governing body representation.

53. Data collection encompasses both sources of data and enumeration methods. The continuum of change has been facilitated by the introduction of technology, and other mechanisms for reaching respondents and ensuring their trust and cooperation. Some countries are moving from face-to-face interviewing, to sending and returning questionnaires by mail, to the addition of telephone interviewing, the use of laptops, the Internet and hand-held digital devices, such as smart phones. The ability to match records and process large volumes of data has led to the increased use of administrative registers and pre-existing administrative records. In addition, to meet changes in societies, combinations of data sources and methods have led some countries to the multi-mode census.

54. Address list development and mapping techniques have progressed from paper lists created as enumerators distributed questionnaires or conducted interviews to the creation of paper maps, and currently to the use of GIS, the global positioning system (GPS) and digitized maps.

55. Data capture has evolved from punching key cards, to keying, to the use of scanning technologies, to imaging and paperless capture with the use of electronic questionnaires. Census data processing began with hand tallies and progressed to the early key punch methods, to computers processing data at previously unimagined speed. It is too early to know the technologies that might be available in the 2020 census round; nevertheless, the international statistical community must be prepared to meet the challenge.

56. Countries represent a broad spectrum of census approaches — from some retaining the traditional approach, which meets their needs, to others relying entirely on administrative registers. In between the two are a vast variety of census approaches and methodologies. There is the use of administrative records, incorporating annual or other regularly conducted surveys into census results. Countries are also developing hybrid methods based on these approaches.

A. Methodologies

57. The emergence of the multi-mode census is one of the key directions for the 2020 World Census Programme. However, many countries will continue to use the traditional census method. For the 2020 round, the survey responses show a number of countries moving away from this method to a blended approach to census-taking, choosing data sources and methods to meet the unique needs of their country. A variety of data collection techniques will be used to make responding to the census less burdensome. Alternatively, data sources will be selected which limit or have no respondent burden.

B. Technologies

58. Flexibility and keeping up with the pace of new technologies will be key for the 2020 round. Technology has the potential to decrease cost (after start-up costs) and time, while improving data quality. The use of the Internet, hand-held computers and tablets will likely increase and provide other options in data collection with the benefit of reducing the volume and therefore reducing the time needed for and the cost of data capture. GPS, GIS and new mapping techniques will improve address listing and geospatial identification. Imaging and scanning will help with data capture. Respondents discussed their (or potential desire for) reliance on improved technology for census-taking. What types of technology will be available for the 2020 round? In addition, will countries have the technical expertise needed to support these technologies? Will countries have the needed funding for the initial start-up costs? These are just some of the questions raised that will need to be addressed during the 2020 census round planning.

> **Recommendation 5**: The United Nations should monitor changes in technology carefully. With such rapid changes in technology, a country's decisions regarding the use of a particular technology need to be fluid, not rigid.

59. Of those countries using some type of technology, 49 per cent contracted out (outsourced) some or all of the technology work. The successes of contracting included (in order of rank): staying within scope, adhering to budget, adhering to schedule, improved census integration and contract management. The challenges to contracting included (in order of rank): contract management, adhering to schedule, staying within scope, adhering to budget and improved census integration. The survey results show that the successes and challenges are very often one and the same.

60. The United Nations publication *Principles and Recommendations for Population and Housing Censuses, Revision 2*[9] provides some information on contracting. However, from the survey results, countries are experiencing mixed outcomes and could benefit from some additional guidelines.

[9] United Nations publication, Sales No. E.07.XVII.8.

Recommendation 6. Consideration should be given to preparing a technical manual on contracting for census technologies or expanding the existing contracting information in the *Principles and Recommendations for Population and Housing Censuses*.

C. New topics (content)

61. Adding topics to a census requires planning, additional cost and the willingness of the population to provide the requested information. Based on the programme review survey, countries were asked how they determined whether to add new topics to their census; they were asked to mark all categories that applied. The key determinants for adding new census topics are requests by data users (78 per cent) and pertinent or evolving issues in the country (64 per cent). Trends in society (57 per cent) and consultations with other international statistical agencies (52 per cent) also factor into their decisions.

62. Many countries responded that it was too early to discuss specific new topics for their 2020 census.

63. The comments provided by and discussions with members of the international statistical community indicate a need to ensure the comparability of data within regions to identify trends and patterns within regions.

D. International collaboration

64. Sharing expertise among countries, particularly within regions, is critical as we move towards the 2020 round. Regions are working together in new ways, consulting with each other, sharing resources, technology (hardware and software) and forming partnerships. Clearly, all countries are facing the same challenges to have a successful census with less cost, faster data dissemination and improved data quality. These are common pressures encountered by all statistical agencies. One of the most important lessons learned and common themes from the 2010 World Census Programme is that we can all learn from each other. Countries are urged to share expertise and admit when one needs assistance. The uniqueness of census-taking requires us to go to other statistical agencies both to seek advice and to be a sounding board to resolve challenges. This requires full cooperation and participation from the international statistical community.

65. The survey results show that countries offer, receive and collaborate in a number of activities. For this question, countries could mark all categories that applied to them. Data- processing advice (25 per cent) was the area of assistance most received by countries from other countries. Other common areas where countries received assistance from another country include mapping (23 per cent) and new technologies (19 per cent). In terms of collaboration, data dissemination (28 per cent), alternative census methodologies (24 per cent) and questionnaire design (19 per cent) ranked highest with regard to areas of collaboration for countries. Data collection (16 per cent) and questionnaire design (15 per cent) were the types of assistance most often provided to other countries.

Recommendation 7: The United Nations should play a more active role in calling for continued and increased collaboration and cooperation in respect of census activities among countries.

E. United Nations support and assistance

66. Over 80 per cent of the responding countries use United Nations census guidelines or publications to prepare for their census. The most widely used publication is the *Principles and Recommendations for Population and Housing Censuses, Revision 2*, followed by the *Handbook on Census Management for Population and Housing Censuses* and the *Handbook on Population and Housing Census Editing*.[10]

67. Countries were asked about their preparation for the 2020 World Census Programme of censuses and how the United Nations should facilitate experience exchanges and promote the use of best practices in census-taking. Countries could mark multiple responses to this question. Workshops or meetings (84 per cent) and working papers, technical manuals or technical reports (83 per cent) were the most the frequently cited ways, followed by revising the *Principles and Recommendations for Population and Housing Censuses* for the 2020 World Census Programme (81 per cent). Conferences (72 per cent) and training (72 per cent) also ranked high. The use of social media to facilitate an exchange of experience ranked the lowest (25 per cent).

68. The United Nations could play a significant role in planning for the 2020 round by providing opportunities for countries to exchange information on their 2010 round experiences and promote the full range of possible census methods. For some countries, guidance is needed on how to choose the most appropriate method(s) to use in the 2020 round by carefully reviewing their country's census goals and its particular data needs. With so many emerging options for census-taking, countries need to be mindful of their goals, capabilities and funding when deciding on an approach.

Recommendation 8: Due to the anticipated increased use of new technologies and emerging trends in census-taking, a third revision to the United Nations *Principles and Recommendations for Population and Housing Censuses* should be developed. This also includes the need to review and update the United Nations "core census topics" and the list of recommended tabulations. Harmonization of census data within (and across) regions can be achieved by ensuring census outputs comply with the recommended tabulations and the United Nations *Demographic Yearbook* data-collection requests.

[10] *Handbook on Census Management for Population and Housing Censuses, Revision 1*, United Nations publication, Sales No. E.00.XVII.5, Rev. 1; and *Handbook on Population and Housing Census Editing, Revision 1*, United Nations publication, Sales No. E.09.XVII.11.

Recommendation 9: Countries should consider many factors and select the most appropriate method(s) and technology(ies) for their own unique situation and data needs. What is appropriate for one country may be inappropriate for another country's census-taking.

Recommendation 10: The United Nations should provide training, workshops and guidance on determining which census methodologies to use to meet the needs and unique situation of each country.

69. To fully address the needs of the statistical community and the challenges of the 2020 round of censuses, we recommend that the Statistical Commission direct the Statistics Division to plan a series of expert meetings. These meetings will gather more detailed information on the lessons learned, identify best practices from the 2010 World Census Programme and clarify emerging trends for the 2020 World Census Programme. This information will be the starting point for planning the 2020 World Programme on Population and Housing Censuses, revisions to key United Nations census publications and preparation for workshops and training in the coming decade.

Recommendation 11: Plans should be made for expert meetings to discuss detailed 2010 census round lessons learned, emerging trends for the 2020 census round and the role of the Statistics Division in providing assistance.

70. Finally, the survey results indicate the need for continued United Nations support of national census-taking worldwide for the 2020 census round. The Statistical Commission is requested to propose a resolution, supported by Member States, to establish the 2020 World Programme on Population and Housing Censuses.

Recommendation 12: Propose a United Nations resolution to kick-off the 2020 World Programme on Population and Housing Censuses.

VII. Conclusions

71. The 2010 World Census Programme may be a transitional time for the world censuses. Census- taking has evolved from face-to-face interviewing and counting by hand to the age of computers and multiple data-collection methods being used.

72. Many societal and technological changes are driving the way we conduct a census. To meet these emerging and evolving trends greater cooperation and collaboration among countries will be required.

73. By the time the 2020 census round begins, technologies and methods for census-taking will likely change rapidly leading towards a paperless (electronic) census being conducted using multiple data- collection modes and processed as the data are received.

74. Countries will need to acquire technical expertise and prudent decision-making to select the most appropriate methods and technologies for their censuses. Resources, funding and data quality will need to be balanced with participation and privacy concerns for successful census-taking in the 2020 World Census Programme. Best practices, lessons learned and open exchanges of information are needed in moving towards the 2020 census round.

75. The preliminary lessons learned from the 2010 World Census Programme are presented throughout sections IV, V and VI of the present review. The lessons learned formed the basis for the recommendations presented in the body of the review and summarized below.

VIII. Recommendations and points for discussion

76. The Commission is invited to think about the current state of worldwide census- taking and to discuss the potential implications of impending technological and methodological changes to the 2020 round of world population and housing censuses. The Commission is requested to continue to provide guidance to the Statistics Division for the 2020 World Population and Housing Census Programme as Member States prepare to meet the challenges of the next decade.

77. **The Commission may wish to consider the following recommendations (summarized from the sections above):**

1. **The present programme review provides an initial evaluation of the censuses conducted and lessons learned but it is too early in the decade to get a good assessment of the programme from most countries, as the bulk of census-taking occurs in the years ending in 10 and 11. The Statistical Commission should consider conducting another lessons learned evaluation as the 2010 census round closes out in 2014.**

2. **An international working group should be established to develop and test an instrument to look at census challenges, lessons learned and directions for the future. The present survey would be used at the beginning of a census cycle, at the mid-point and at the end, to assess the trends of the decade. Repeated use of the same instrument will enable comparison of data throughout the decade. A companion document explaining the purpose of each survey question should be created.**

3. **Work should be done to develop an accurate, viable method to estimate the costs of conducting a census, which can be used to compare census cost across regions and/or countries.**

4. **The United Nations should create a task force or committee to rethink, update and synchronize definitions of census terminology for data**

sources and enumeration methods based on current practices. Care should be taken to ensure that terminology and acronyms are defined and consistently used.

5. The United Nations should monitor changes in technology carefully. With such rapid changes in technology, a country's decisions regarding the use of a particular technology need to be fluid and not rigid.

6. Consideration should be given to preparing a technical manual on contracting for census technologies or expanding the existing contracting information in the *Principles and Recommendations for Population and Housing Censuses*.

7. The United Nations should play a more active role in calling for continued and increased collaboration and cooperation with respect to census activities among countries.

8. Due to the anticipated increased use of new technologies and emerging trends in census-taking, a third revision to the *Principles and Recommendations for Population and Housing Censuses* should be prepared. This also includes the need to review and update the United Nations "core census topics" and the list of recommended tabulations. Harmonization of census data within (and across) regions can be achieved by ensuring that census outputs comply with the recommended tabulations and the United Nations *Demographic Yearbook* data-collection requests.

9. Countries should consider many factors and select the most appropriate method(s) and technology(ies) for their own unique situation and data needs. What is appropriate for one country may be inappropriate for another country's census-taking.

10. The United Nations should provide training and guidance on determining which census methodologies should be used to meet the needs and unique situation of each country.

11. Plans should be made for the holding of expert meetings to discuss detailed 2010 census round lessons learned, emerging trends for the 2020 round and the role of the Statistics Division in providing assistance.

12. A United Nations resolution should be proposed to kick-off the 2020 World Programme on Population and Housing Censuses.

Annex

Countries that responded to the 2010 World Population and Housing Programme review questionnaire

Africa
Botswana
Burkina Faso
Central African Republic
Chad
Comoros
Egypt
Ethiopia
Gambia
Ghana
Lesotho
Mali
Mauritius
Morocco*
Mozambique
Niger
Rwanda
Senegal
Seychelles
Swaziland
United Republic of Tanzania
Zambia
Zimbabwe

North America
Antigua and Barbuda*
Bahamas
Barbados
Canada
Costa Rica
Cuba
Dominica
Dominican Republic
Jamaica
Mexico
Nicaragua
Panama
Saint Vincent and the Grenadines
Trinidad and Tobago
United States of America

South America
Argentina
Chile
Colombia
Ecuador
Peru
Suriname
Uruguay

Asia
Afghanistan
Armenia
Azerbaijan
Bhutan
Cambodia
China
Indonesia
Iraq
Israel
Japan
Jordan
Kuwait
Lebanon
Malaysia
Maldives
Mongolia
Oman
Pakistan
Philippines
Qatar
Republic of Korea
Saudi Arabia
Singapore
Sri Lanka
Tajikistan
Thailand
Timor-Leste
Turkey*
Viet Nam

Europe
Albania
Austria
Belarus
Croatia
Czech Republic
Denmark
Estonia
Finland
Germany
Greece
Hungary
Iceland
Ireland
Italy
Latvia
Liechtenstein
Lithuania
Luxembourg
Montenegro
Netherlands
Norway
Poland
Portugal
Republic of Moldova
Romania
Russian Federation
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Ukraine
United Kingdom of Great Britain and Northern Ireland

Oceania
Australia
Kiribati
Nauru
New Zealand
Palau
Tuvalu

* These countries submitted their questionnaires after the 1 September 2011 deadline. Hence, the information provided by them is not included in the survey results.